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Mr. Browne is an associate professor of geography, State Teachers College, Nacogdoches, Texas. At present he is carrying forward his graduate studies and teaching in Peabody College for Teachers. Among his other contributions to the JOURNAL are: "Some Frontier Conditions in the Hilly Portions of the Ozarks", "The Aluminum Ore Industry of Arkansas," and "The Lower Mississippi as a Waterway." He presents this month the twentieth article in our series on human geography. The next article in this series will be by Mr. Edmund Clubb, Hankow, China, entitled, "The Floods of China, a National Disaster."

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VOLUME XXXI APRIL, 1932 NUMBER 4

GRAND PRAIRIE: A PROGRESSIVE RICE REGION

W. A. BROWNE
State Teachers College,
Nacogdoches, Texas

Grand Prairie with its rich soil and neat appearing farms at once gives the impression of a progressive region. Advanced community life is apparent on every hand. A network of highways of concrete, asphalt, gravel, and well-graded dirt, further enhanced by considerable railway mileage, gives to the area a well developed and conspicuous transportation system. Over much of the region, especially along arterial highways, it is the rice fields that give color to the summer landscape, mingled with touches of other cultivated crops and grasslands. However, a promiscuous distribution of forested plots from one acre to 1,000 acres in extent, referred to as islands, dot the lands about the farmsteads and along stream courses and serve to give variety to an otherwise monotonous series of landscapes of seemingly endless stretches of rice fields. Here and there, with considerable intervening distances, stand the progressive appearing farm homes on plots of 200, 300, or more

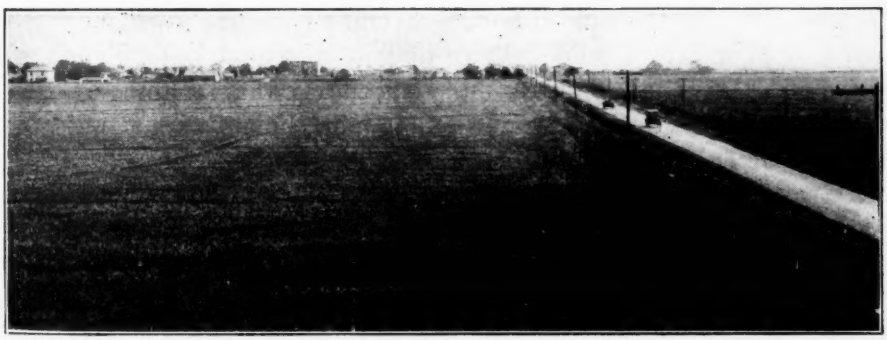

FIG. 1. A more progressive appearing landscape in the rice region. Note the levees. On the level lands they are far apart and almost straight. (Photo by Downing Studio, Stuttgart, Arkansas.)

acres, usually close by or crouched within the smaller "islands" of forest. The typical farmstead consists of a two-story house, barn, garage, and an upright, tank-like structure for storing threshed rice, all of which have a well-kept appearance (Fig. 3). At still greater intervals of space are to be seen towns or small cities which maintain the general tenor of the region. Straight, wide streets thru the business and residential districts are typical, and in certain cases portions of the towns have special lighting fixtures, as the White Way of Stuttgart, a city of 6,000 population. A special feature of the larger urban centers, and a most conspicuous object from several miles distant across the level lands, is the towering rice mill which rises above the even skyline and reminds one of the grain elevator of a wheat region town. But in this case the train of lingering freight cars are awaiting their burdens of rough or polished rice instead of wheat, oats, or bellowing herds (Fig. 4). The combined scene is that of mid-western plains area plus a considerable amount of timber with vegetation as a whole evidencing results of greater precipitation.

FIG. 2. Map of Grand Prairie and adjacent territory. Preliminary Survey of Grand Prairie, Ark., 1931, Plates I & II. Inset shows location of Grand Prairie in the state. After U.S.G.S.

Grand Prairie lies in the east central part of Arkansas and extends some ninety miles in a northwest-southeast direction with an average width of 25 miles, wedged in between the Arkansas and White rivers in close proximity to the confluence of these streams (Fig. 2). Contrary to the too-oft expressed opinion concerning rice lands, the area is a well-drained, healthful place. It ranges in altitude from 175 to 250 feet. The boundaries are determined by

lower or more broken lands where forests triumphed over grass in the rivalry for a foothold. In its original state the region was so promising as a home for man that the earliest immigrants to the state selected home sites here; and Arkansas County, the heart of Grand Prairie, was the first county to be organized.

RICE

When driving thru the rice district where fields of the waving grain line the highways on either side for miles, we fail to appreciate the experimental beginning of this industry in 1901 on a 9 by 27-foot plot which was irrigated from a windmill-operated home well, at which time the older districts, as in Louisiana, were well developed. In 1904, a field of 70 acres was grown near Carlisle, the beginning on a commercial scale of the present rice industry of Grand Prairie. Once the inhabitants became interested in the crop, the rolling prairie lands were easily prepared for irrigation and the loamy to black fertile soil responded with abundant yields of the favored grain.

Planting and Care of the Crop

The same methods are employed in preparing the seed bed for rice as that for wheat or oats, and essentially the same kind of machinery is used. Following this preparation the irrigation levees are thrown up in order that planting may be carried on over these features and also to avoid disturbing the land after planting is done. Planting ordinarily ranges between April 15 and May 15, and again the practice is quite like that employed with other cereals, that is, the grain is merely drilled in, applying about two bushels per acre. The application of water completes, in the main, the requirements for producing a rice crop.

Irrigation

When the young plants are from two to four inches high, water is turned onto the fields. The water supply is pumped from wells, but bores of 150 feet pierce a stratum of water-bearing sand 50 to 100 feet in thickness from which an abundant supply of water is obtained.[1] Heretofore, oil-burning engines have been used for pumping and this practice is yet common, but the extension into

[1] A limited amount of irrigation water is obtained from streams, but the quantity is not important.

the region of electric transmission lines has caused many to turn to that source of power. More and more producers are adopting electric power.

Since water can be secured from any position on Grand Prairie, the well is located in the most advantageous position, which is the highest point of the area intended for rice production on the farm. From a large pool at the well, water is led thru major ditches, thence directed onto the fields, and is kept evenly distributed by the levees. The almost impervious clay subsoil of 8 to 50 feet thickness reduces the loss from downward percolation to a minimum, while fairly high relative humidity of the atmosphere keeps evaporation low. Where the fields are almost level, irrigation is more of a flooding process. Here the levees are far apart and almost straight (Fig. 1). But on the more undulating lands, particularly that which reaches into territory of marginal production, levees are higher, less distance apart, and show a marked serpentine contour. Here much more care is necessary in directing the water. A somewhat unique practice adopted by some growers is to divert water from a field of early rice which is ready to drain into a ditch alongside a highway, let it flow down to a field of later rice, and thence onto that field. Under certain conditions, water drained from rice fields is directed over fields of cotton or corn. For an average year, ninety days of artificial watering suffices; in very dry seasons the period may be much longer, as in 1930 when irrigation continued for 110 days. Two or three weeks before harvest time, the fields are drained so the land may be dry for using machinery in cutting, which begins about September 1.

FIG. 3. A typical farmstead of Grand Prairie. As a rule more trees accompany homestead sites.

The Harvest-Threshing Period

Typical rice harvesting in Grand Prairie is not unlike wheat harvesting on our western plains (Fig. 6). After the fields are dry and as soon as the rice matures, cutting begins with the binder. The proper stage for cutting lasts but a few days. If the rice is

cut too early, immature, light, chalky grains result, while if let stand too long before cutting, the kernels will sun-check or crack. The grower attempts to cut as much as possible at the proper stage; therefore he usually begins so early that a small portion is immature, and likely before cutting is finished a minor portion will sun-check. Letting the grain stand late tends in general to lessen the moisture content, which is desirable, but the hazards involved are great. Sun-checking continues, winds may damage, while heavy dews or rains sometimes restore moisture in the grain.

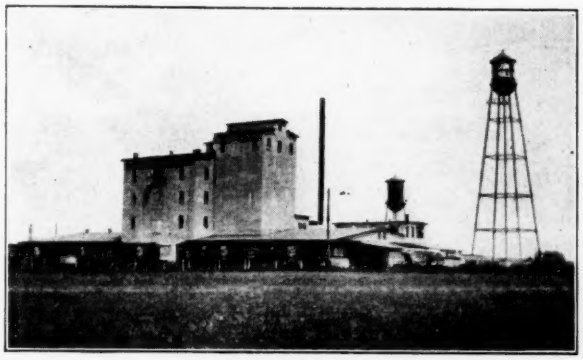

FIG. 4. Rice mill of Stuttgart, Arkansas. The freight cars are awaiting their loads of rice.

During the interval between cutting and threshing, which may be several weeks or a few months, some fields may be subjected to rains. In such cases considerable quantities of rice are damaged; and if heavy rains occur, the shocks may settle into the mud. Exposure of outside bundles results in sun-checking, the shocks may twist or fall, and wild birds, principally blackbirds and ducks, take their share. Under such conditions if threshing can be done, there is much outright loss besides a high percentage of low quality grain. In extreme cases total loss may result.

In order to avoid such waste the combine has been introduced with success. This practice removes the product from the hands of nature to those of man, yet it has disadvantages as well as advantages. The process eliminates the foregoing wastes and insures high quality product, but it does necessitate artificial drying which has proved, in experimental work, to be very satisfactory. Not considering the drying process, the operation of the combine has been found comparatively expensive. This machine will cut about the same acreage daily as is cut with a binder and the invested capital is far greater. A compromise in these methods seems probable by the use of a header, similar to those used for wheat, and hauling directly from the header to the thresher. As a rule, the threshed grain is handled in the bulk in this particular region, altho bags are employed in caring for most other southern rice.

Variation and Extent of the Crop[2]

Numerous varieties are grown in the region, the combined extent of which makes Grand Prairie one of the important rice-producing areas of the country. Arkansas ranks second among our rice-growing states, and Grand Prairie produces approximately 80 per cent of the total crop of the state (Fig. 5). The six leading varieties of the state, with the acreage of each, most of which are grown in Grand Prairie, are: Early Prolific 98,385; Blue Rose, 64,345; Japan, 11,515; Lady Wright, 5,520; Edith, 3,850; Fortuna, 300. Small quantities of other long-grained varieties are grown—in all 2,010 acres. This stands out in contrast to varieties grown in other states. Blue Rose leads in Texas, about three-fourths of the crop in Louisiana is of the same variety, while the entire crop of California is of the Japan variety.

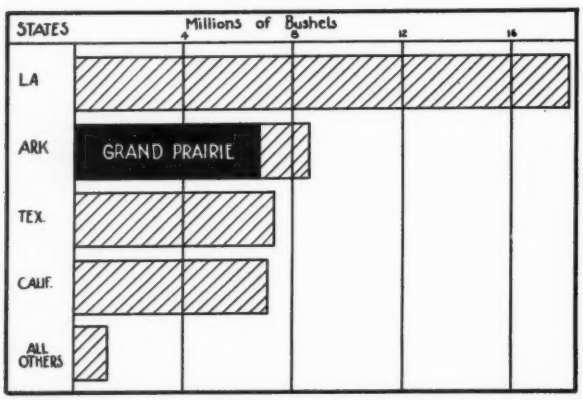

FIG. 5. Rice production in the United States, 1926-28 average. Solid color shows the importance of Grand Prairie in this industry. *U. S. Dept. of Agr. Yearbook*, 1928, p. 747.

Influence of Rice on the Region

As already noted, rice occupies a most conspicuous position in Grand Prairie. Its prominence corresponds to that of corn in the corn belt, wheat in the wheat belt, or cotton in the cotton belt. As the landscape is dominated by the rice field, so are various influences of the rice industry evidenced among human activities in the region. Rice production has been the leading factor in bringing the tractor into general use on the farms. When approaching a town or city, the rice effect may be noted from some distance in the imposing rice-mill structures, as demonstrated by Stuttgart with its five large rice-milling plants. From the streets are to be seen tractors, drilling apparatus, binders, pumps, in fact everything from the thresher to the lowly spade and rubber boot which

[2] Data from August, 1930, estimates in the *Rice Journal*, August, 1930, pp. 23, 24.

may be required about the flooded field. Business concerns appropriate names pertaining to rice instead of those of presidents or of local heroes, as Hotel Riceland, Rice Growers Association, and Rice Belt Feed Store. Brokers offices, Chamber of Commerce, and other more expansive type activities evidence interest in rice which reaches beyond the bounds of the rice-producing area.

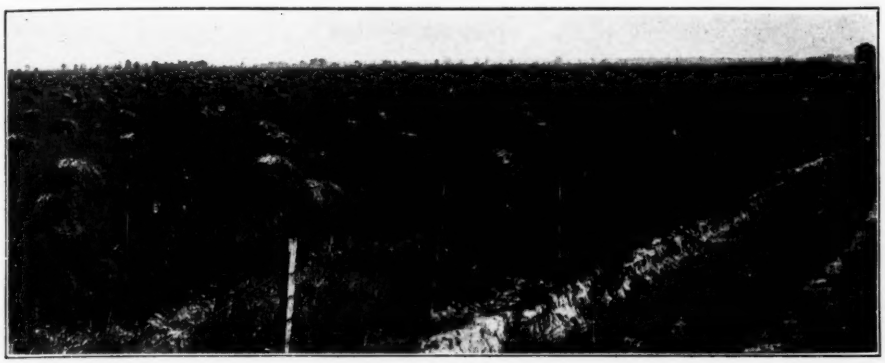

FIG. 6. A field of rice awaiting the thresher. (Photo by Downing Studio, Stuttgart, Arkansas.)

One of the most far-reaching influences comes indirectly. Altho natural conditions would attract birds from the north for winter, the excellent food supplied by the unharvested and other waste rice adds much to nature's provisions. Ducks and blackbirds flock to the region in almost unbelievable numbers (Fig. 8).

Direct and extensive advertising also demands attention within and beyond the confines of the territory. The homeseeker is given encouraging "information" while the housewife may glean numerous recipes from publications on how to use the fruit of the land. One issue of a certain magazine carried thirty-one recipes for serving rice. Anyone may order small bags of the "best rice in the world" directly from the district, while those passing thru the rice region are advised in large print from the top of one of the highest structures to "eat more rice and less meat."

Rice production has developed another situation which is of more grave concern. With the expansion of the industry has come the lowering of the water table, the problem of which finally led to a somewhat extensive geological survey. From this survey it was discovered that the water supply has been changed from an artesian condition, under the impervious stratum, to an ordinary water

table with a maximum lowering of 30 to 35 feet. The most extensive pumping in the interior of the region, with the apparent lateral movement of the underground water, has operated to form from the original southeast sloping water table, which corresponded to the general surface slope, a basin under the heart of the rice terri-

FIG. 7. Threshing rice on Grand Prairie. (Photo by Downing Studio, Stuttgart, Arkansas.)

tory. That is, pumping has removed water faster than it has been replaced, which has resulted in a lowered water table, most marked in the central part of the irrigated district (Fig. 2). For some years the average drop has reached one or more feet per year with a maximum drop of 2.44 feet in the dry year of 1930. Such data definitely show that the water supply near the surface is being impaired, and that present rate of use points to probable exhaustion. Should this source from the upper water-bearing strata (early Quarternary) fail, water can be had from approximately three times the depth of present wells from lower water bearing strata (Tertiary) but at trebled initial cost of the wells besides increased operating expenses.[8]

OTHER AGRICULTURAL CROPS

As previously noted, climatic and soil conditions are highly favorable for a large number of agricultural crops. Altho rice is far in the lead, oats, cotton, corn, and soy beans are important. Since livestock are rather limited in numbers, oats are raised largely as a cash crop, and rank second only to rice as such. Mild winters permit fall as well as spring planting and the yield is relatively high. Cotton holds a position of considerable importance,

[8] At 1929 prices, wells cost from $1,000 to $2,000. The cost of deep wells would have reached $7,000. From Dept. of Int., Rice Irrigation in the Grand Prairie of Arkansas, released January, 1931.

but the interest in rice has tended to crowd this crop onto rougher, less desirable lands, in most instances at least to fields undesirable for rice growing. Heretofore, little interest has been given to the irrigation of cotton, but experiments prove great possibilities for such industry. In 1930, when cotton was much reduced by drought in many parts, under experimental irrigation in Grand Prairie a heavy yield of excellent fiber was produced. Both oats and cotton fit fairly well in the farm economy of the rice grower, altho there is some conflict during the planting and picking periods in case of the cotton. Corn grows well, but thus far the competition from other crops has kept the acreage of this grain rather low, with some increase in recent years.

Soy beans are rapidly acquiring an important and somewhat unique position among the farm crops. As with many other crops, rice grown year after year on the same land lowers the yield to a critical point. Experience shows that fresh land will produce 70 to 90 bushels per acre while lands sown 4 or 5 consecutive years are lowered to some 40 bushels per acre. Furthermore, after this practice, soil conditions become such that a rust-like coating forms on

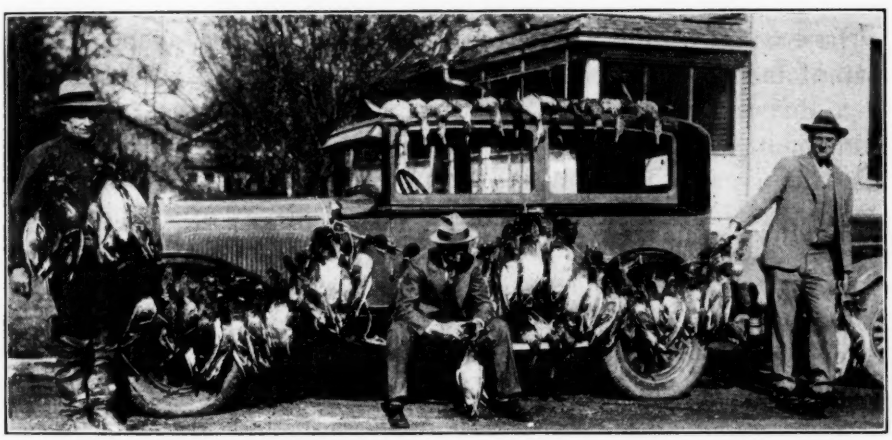

FIG. 8. Hunters with their "catch." Ducks flock to the region for winter in very great numbers. (Photo by Downing Studio, Stuttgart, Arkansas.)

the rice which requires special polishing to remove, entailing loss in weight and food value of the grain as well as adding to the expense of the process. Letting the land lie idle one year usually will remedy this evil, but it has been found that a crop of soy beans has the same effect in eliminating rust and the following year the

yield of rice is increased to 60 or 70 bushels, all of which does not detract from the valuable forage crop of the beans.

A number of other crops, including alfalfa, sweet potatoes, vegetables, and deciduous fruits, produce well and are grown in more or less quantity, but competition of other crops and limited markets have kept the acreage low. Growth of nearby urban population and development of the dairy industry within the region are stimulating output of these minor crops. Portions of the land yet remain sodded in native grasses which serve well either as pasture lands or for hay fields where topographic conditions permit machine operation. Long growing season with abundant rainfall insures two or three crops a year from fields reserved for hay.

ADJUSTMENTS TO THE NATURAL ENVIRONMENT

Development in Grand Prairie has followed chronological order rather closely. When our race first occupied the lands, the simple provisions of nature were closely adhered to; as national development ushered in complexity, the region has undergone similar readjustments; that is, the more complex natural resouces are being utilized.

Prairie conditions in the natural state plus the dependence on distant markets without transportation facilities early gave rise to a thriving cattle industry, typical of our western plains development. Grand Prairie was even better adapted to this industry than the average plains area. With 50 to 60 inches of rainfall and a long growing season, it was a pasture land par excellence. Mild winters placed the expense of shelters at a minimum. But the region was destined by nature for more intensive utilization. Varied agricultural crops pushed in more and more as greater population and means of transportation made possible their disposal. With further development came railways, farm machinery, drilling apparatus, milling equipment, plant breeding, irrigation, and on into the modern rice industry of the region.

The natural conditions were present when the first settlers arrived, but the several phases of development just noted were necessary before rice could either be produced on a commercial scale or disposed of after being grown.

The advent of rice and other crops marked the end of the pastoral stage and subsequently a decline in the number of cattle produced. Not only did crops usurp the grasslands, as in the plains

farther west, but in this particular case the rise of the mosquito pest from breeding places provided in the irrigated rice fields has been a considerable factor in bringing about a decline in the cattle industry. Happily for the people, the insect is not the malarial species, and dairy cattle can be sprayed, thus warding off the pest and permitting the rise of dairying especially noted in recent years. Other than decline in native grass, the same natural advantages which gave rise to beef production in early times are now present for the dairy animal. With the growth of cities for markets (Stuttgart and DeWitt in Grand Prairie and Little Rock and Memphis, the latter two, 50 and 120 miles respectively) the last requirement for this industry was met.

Nature and man likewise have coöperated in making this area a rendezvous for the winter sportsman. Mild winters welcome the birds in their search for a winter home and the farmer's rice provides a repast for their sojourn. Stream courses and small lakes or ponds, often concealed by timber growth, provide a select habitat for the ducks. Camps or lodges with all necessary equipment both for camping and hunting have been provided for the hunters who make their annual call in search of "hawking" lure (Fig. 8). The excellent opportunities offered for this sport are fast making the region a hunting ground of more than local or even state importance.

RAISING THE STARS AND STRIPES OVER SWAINS ISLAND

QUINCY F. ROBERTS
American Consulate, Suva, Fiji Islands

Way out in the Pacific Ocean all on its own lies Swains Island, sometimes known as Quiros Island, Gente Hermosa, and Olosega. If the map is large enough it may be found as a tiny speck in latitude 11° 3′ 18″ south and longitude 171° 5′ 53″ west, otherwise there will be a blank space where the American flag waves

FIG. 1. Swains Island in the distance

over Uncle Sam's newest possession. It lies about 210 miles north of American Samoa and a little less from the mandated territory of Western Samoa. Its nearest neighbors are on the Tokelau Islands, one hundred and fifty miles away.

DISCOVERY

If the records of the early Spanish navigators can be relied upon, then the distinguished Pedro Fernandez de Quiros, who had been a pilot with Mendana, discovered Swains Island March 2, 1606, on the voyage when he added the New Hebrides and Tahiti to the map of the world. His chronicler passes over the doubtful commercial and strategic importance of the discovery and has an eye only for the beauty of the inhabitants.[1] He wrote, "The women were remarked for gracefulness of demeanor; they were clothed from the waist downwards with white mats of a very fine texture, and some had mats with which they covered their shoulders. Their complexion was white, and if they were properly clothed, they would without doubt have the advantage of our Spanish ladies."

[1] Juan de Torquemada. Monarchia Indiana. Vol. 5. Ch. 64.

The island was named Isla de la Gente Hermosa or the Island of Beautiful People.

But not all of the Spanish discoverers were so favorably impressed by the inhabitants of Swains Island. Luis Vaez de Torres, Almirante or Second in Command, found a name that he considered more descriptive of the people.[2] In about 10° south latitude he found the low-lying island. He reported that the natives came close to the ship, talking, taking whatever presents were given them, begging more, stealing whatever was hanging to the ship, and throwing lances. Fifty of his men were ordered ashore to get fresh water and because of the threatening attitude of the natives "had to do them some mischief." Torres named the island Matanza which may be interpreted as Island of Slaughter.

United States Exploring Expedition

The first reliable information about Swains Island is found in the narrative of Commodore Wilkes who headed the United States Exploring Expedition in the early part of the last century.[3] Captain Hudson in command of the United States Ships *Peacock* and *Flying Fish* searched for the Gente Hermosa of the Spanish writers but could not find it in the positions laid down by the early voyagers. Two days search and a coral island about four and three-tenths miles in circumference was found in 11° 5′ south and 170° 55′ 15″ west. The island had an elevation of fifteen to twenty-five feet above sea level and was wooded with coconut palms and pandanus. Except for the coconut palms it bore no evidence of ever having been inhabited. The discrepancies between his island and the Spanish Gente Hermosa caused Captain Hudson to name the land Swains Island, after the whaling master who first informed him of the island's existence.

Eli I Establishes the Jennings Dynasty

Two hundred and fifty years after the Spanish discovery came one of those hardy American pioneers who wandered over the face of the earth in search of fortune and adventure. Perhaps he came as a whaler out of New Bedford; he might have been a trader in sandalwood and beche-de-mer sailing between the South Seas and China. The Jennings family claim that Eli I was born at

[2] Translation of Relation of Luis de Torres.

[3] Wilkes. Narrative of the U. S. Exploring Expedition. London, 1852.

Rockhampton, New York, and that he came to the South Seas from Sagg Harbor, Long Island, New York. The family records show that he acquired Swains Island as a gift from Captain Turnbull, the British owner, and on October 15, 1856, settled on the island with his Samoan wife, Maria, the daughter of a high chief.

Eli I lived on the island until his death, December 4, 1878, and the island kingdom passed to the widow, Maria, who ruled happily until her death, October 25, 1891. Maria willed the island to her son, Eli Hutchinson Jennings, Eli II, with certain minor legacies to the other children. Mr. I. H. Carruthers, son-in-law of the ruler, became Prime Minister, carrying out the duties of General Manager and Overseer. On October 24, 1920, Eli II died leaving the island and all property to his son, Alexander Eli Jennings, and his daughter, Annie Eliza Carruthers, as tenants in common, with Mr. I. H. Carruthers as trustee.

THE JENNINGS SYSTEM OF GOVERNMENT

Swains Island reached the height of its glory just before the end of Eli the Second's reign. The demand for copra during the war brought wealth into the kingdom. Emigration had not yet sapped the man power of the island and there were ample funds in the Treasury.

The kingdom was worked on the Samoan Matai or clan system. Under this system Jennings was the absolute owner of all property and head of the clan. The coconuts of the land, the pigs by whomever fed, the taro of the gardens, the fish of the sea, and the fowls of the air belonged to Eli, the Ruler.

The inhabitants of the island were relatives of the Jennings family—whether by blood or adoption was immaterial—and they looked to Eli as the Matai for their welfare and their livelihood. He divided the fish, the fowls, the food, and all property pro rata among the members of his tribe. The natives were fed from a central mess house and participated in everything share and share alike.

These residents on Swains Island did not consider themselves as laborers tho they worked for Eli and his family. They considered they were on a visit to their family, even tho the visit might last a lifetime. They received food, clothing, and other necessities from the common larder. In return they worked at copra cutting, fishing, and other tasks set by the Manager. An accurate record of all

advances was kept by the Treasury. When it came time to leave the island the supplies issued and cash advances were added up and an additional sum was paid in cash so that all would receive practically the same amount for their services. The final payment was regarded by the natives as a gift, for in the island custom the offer of a salary would have been an insult, where an "Alofa" or gift of love is always acceptable. These parting gifts ranged from ten dollars to one hundred and thirty dollars, depending upon the length of service and the payments in store goods.

FIG. 2. Alexander Eli Jennings (Eli III), Mrs. Jennings, and the little Jennings

It is a matter of record that the natives of Swains Island were happy and content. Food was plentiful in sickness and in health; the work was not hard; Eli was liberal in the treatment of his subjects. The people were free to come and go as they liked. Many natives after leaving the island returned to work for the Matai. They preferred to live under the pleasant conditions prevailing on the island rather than stay in the Tokelau Island and in the Samoan Islands. Several of the residents had been "visiting" Eli for long periods of ten to sixty years. As the South Sea Islander is exceedingly wary where he has been ill treated, it spoke well for the Jennings Administration. The Matai system, however unsatisfactory it may be to Anglo-Saxon ideas of government was successful on Swains Island.

A MAN WITHOUT A COUNTRY

In November, 1920, Prime Minister Carruthers, accompanied by Alexander Eli Jennings, Eli III, and Annie Eliza Carruthers appeared at the American Consulate at Apia, Western Samoa, to

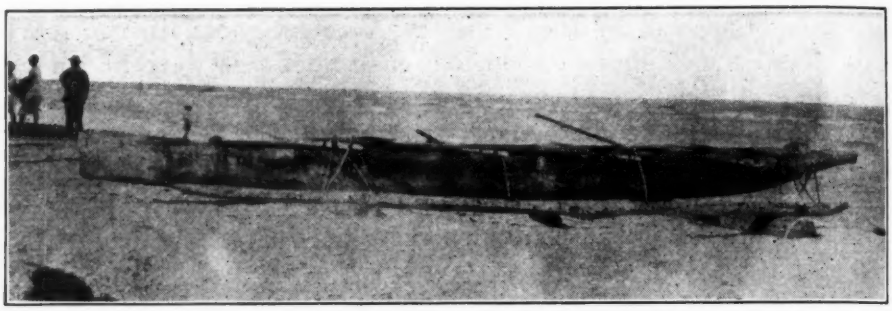

FIG. 3. Swains Island outrigger canoe

claim the succession under a will offered for probate. The Apia Consulate, with extraterritorial judicial powers in the past, had exercised civil jurisdiction over Swains Island, but the Washington Convention of 1899 dividing the Samoan Island abolished the judicial powers of the officer at Apia.

In American Samoa were the nearest administrative and judicial authorities of the United States. It was suggested to the heirs that the will be offered to the Court of American Samoa for probate. The judge at Pago Pago, American Samoa, studied the treaty under which the United States acquired American Samoa, the Executive Order handing the islands over to the Navy Department, and decided that he had no jurisdiction over the Jennings Kingdom.

The State Department searched its records and found that Swains Island way back in 1860 had been registered as a guano island under the name of Quiros Island. While the criminal jurisdiction of the United States was thus extended to the island by Congress and persons charged with crimes could be punished under the laws relating to ships and offenses on the high seas, no provision was made for civil jurisdiction.

Altho the Jennings family had flown the American flag over Swains Island for more than sixty years, Eli III found that he was a man without a country and no one would stand by to protect him in his kingdom. He held Swains Island by right of possession but at any time a usurper might arise and eject the Jennings dynasty from the insular domain.

CLASH OF AMERICAN AND BRITISH INTERESTS

And there was reason to fear there might be trouble from British settlers on adjacent islands. In 1909 the British Resident Commissioner in the Gilbert Islands exacted taxes from Eli II who paid

them under protest and appealed to the American Consul at Apia. The Consul intervened and his representations made to the British High Commissioner at Suva, Fiji Islands, led to the refund of the taxes to Eli II.

In the Ellice Island there was a British island owner and a ship owner who was ambitious to bring Swains Island under his sway. He furnished the only transportation to the Jennings Kingdom for a long time after the outbreak of war in 1914 and was able to get the Jennings régime heavily in his debt. Then two American firms at Apia came to the aid of Swains Island with shipping and facilities for marketing the island product—copra. Prices soared overnight, there was an increasing demand for copra, and soon the Jennings family found their kingdom solvent and money accumulating in the Treasury.

But the British merchant was not driven from the field without a struggle. He searched his own domain and found a claimant to the title of Swains Island based upon the alleged occupation of the island by the Tyrell family prior to the arrival of the Jennings. It was claimed that Eli I landed on the island by force and dispossessed a small child of eight years. The Tyrell claim was brought forward to harass the American occupiers of the atoll.

In 1917 the British Government presented charges of cruel and inhuman treatment brought by several persons in Apia, Western Samoa against Eli II. These charges were investigated by an

FIG. 4. Village scene and flora at Swains Island

American naval officer who completely exonerated the Jennings family. The investigator went so far as to say that in his opinion the complainants' motive was to question the title of Eli II and that they were "prompted, aided, and abetted" by the British ship owner who lost the business of Swains Island.

On one of his regular trips to Apia the British captain called at the American Consulate seeking information about Swains Island and the Tyrell claim. As he turned to leave he asked, "Con-

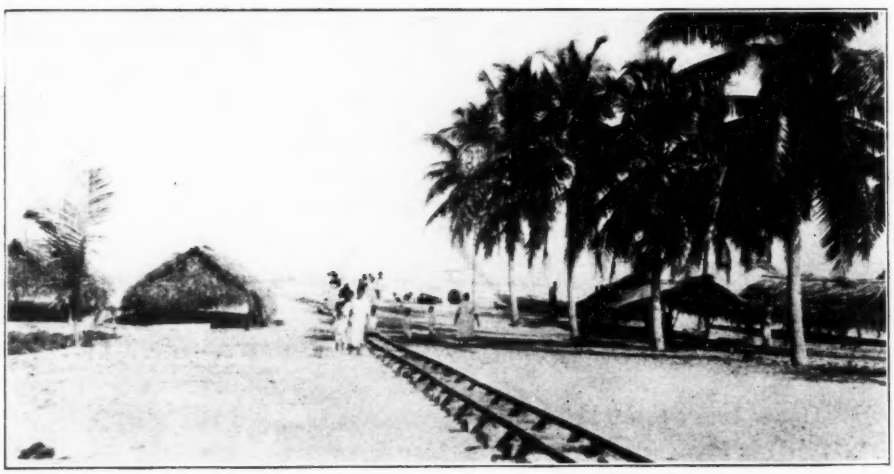

FIG. 5. The Copra Railway Line on Swains Island

sul, what would you do if I went up to Swains Island and put the Jennings crowd off the island?" Back came the Consular Officer without a moment's hestitation, "There would be a warship at the island within twenty-four hours to blow you off the island." Fortunately for the peace of the South Pacific it was not necessary to back up this threat with guns.

HEIRS PETITION FOR ANNEXATION

On November 10, 1922, the American Consul at Apia and Alexander Eli Jennings proceeded to Pago Pago, American Samoa, to urge the Governor of American Samoa to extend his government to Swains Island. Captain Edwin T. Pollock, United States Navy, Governor, was sympathetic and as a matter of national pride was prepared to work for formal annexation. A petition signed by Eli III went forward with the Governor's recommendation that the status of the island be definitely established to protect the rights

of an American citizen. In December of the same year, Mr. Irving H. Carruthers, on his own behalf and that of his minor children, applied to the American Consulate at Apia for the extension of the jurisdiction of American Samoa to Swains. Again the Consular Officer brought the same arguments to the support of the plea for formal annexation and stated there were a number of claims against the island that should receive a hearing in some court.

ANNEXATION

For nearly two years the status of Swains Island was the subject of negotiations between the Department of State and the Navy Department. Finally the Department of State recommended to the President that the whole matter be laid before Congress for consideration whether the island should be given a definite status as American territory. On March 4, 1925, the President approved Public Resolution No. 75 of the Sixty-eighth Congress extending the sovereignty of the United States over American Samoa to Swains Island, which was made a part of American Samoa and placed under the jurisdiction of the American administrative and judicial authorities at Pago Pago.

The Governor of American Samoa sent the United States Ship *Ontario* to formally raise the American flag over the island. On behalf of the residents of Swains Island and the Jennings family, the Samoan pastor welcomed the naval officers and said that Swains Island in the past without mother and father had at last been recognized, Congress having at last authorized the annexation. The American flag was placed over the island by the United States Navy and in this way the American Government recognized its child. Henceforth the inhabitants would have protection and they would no longer fear that some other government would turn them out of their homes. At last the Jennings family had the right to fly Old Glory over Uncle Sam's newest possession.

A TAX LIST STUDY OF ARIZONA

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In a state with the industrial contrasts of Arizona, a statistical study of the assessed valuation of property by various classes and counties is perhaps the easiest approach to its economic geography. The significant results of the climate, soil, geology, and topography are revealed by examining the tax lists.

THE PRIMARY INDUSTRIES

The primary industries of the state immediately appear to be four: mining, farming, grazing, and lumbering (Fig. 1). The last named is insignificant, furnishing only two-tenths of one per cent of the taxable wealth. The animal industries grouped under grazing amount to only four per cent. This includes land and improvements devoted to the beef cattle, sheep, and goat industries as well as the animals themselves. Nine per cent of the state's wealth is definitely connected with farming in the form of irrigated and dry-farming land, improvements, dairy cattle, and poultry. The casual traveler might think that farming is the chief industry of the state, but important, widely scattered mineral deposits give mining four times the economic importance of agriculture. Smelters, concentrators, mining machinery, and supplies are all grouped with mines and their improvements in this total.

Differences in the severity of assessment of the various classes of property have been ignored in this discussion for two reasons: first, such differences cannot be accurately ascertained, and second, any changes in the tax list values which might be necessary to make this correction, such as raising agricultural and lowering mining appraisals, would not alter our general conclusions.

The chart showing the wealth of Arizona indicates that the primary industries above discussed comprise more than half of the taxable property. From these basic occupations is derived the value of the other two classes of property tho each of them contains some elements so directly dependent upon geographic factors that part may properly be called primary.

PRIMARY ORIGINS OF SECONDARY PROPERTY

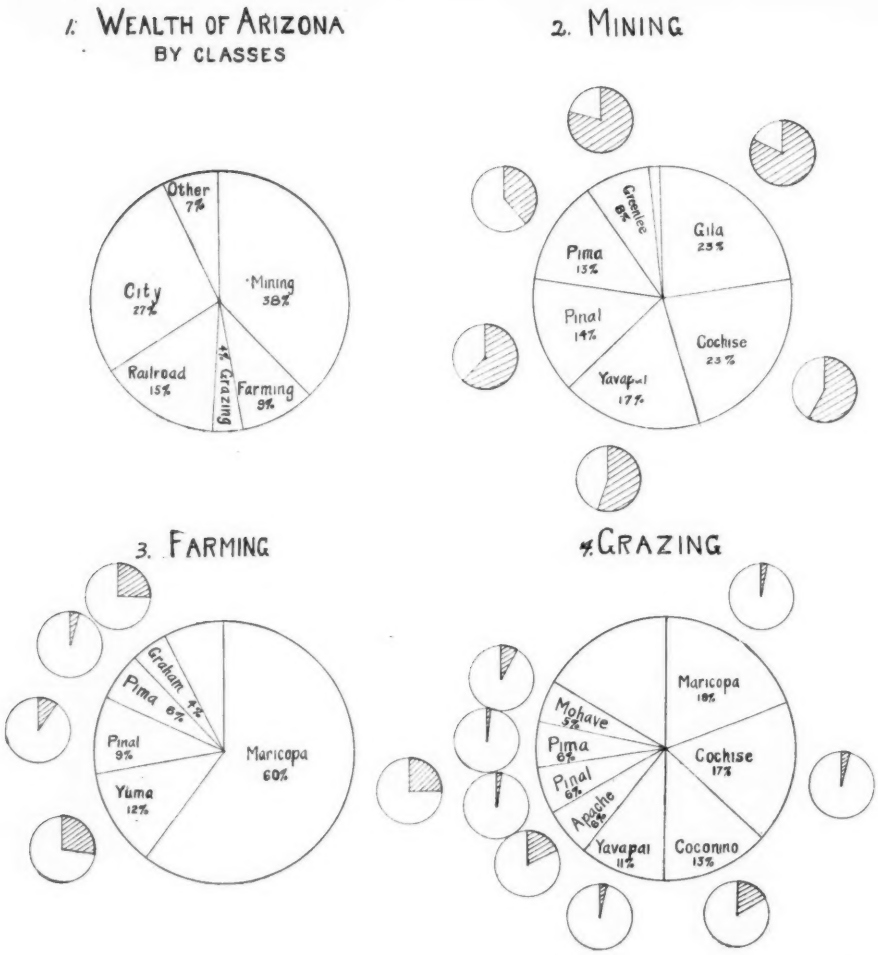
The railroads of the state clearly evidence this dual reason for their existence. The Southern Pacific and the Santa Fe were first

built across Arizona due to the transcontinental traffic opportunities. Much thru transportation still occurs and must be counted as a primary industry of the state derived from the geographic factors of location and topography. At the present time, however, traffic of local origin or destination is of greater importance and the railroad property which it sustains must be thought of as secondary.

City property includes the value of all city and town lots and improvements (75 per cent of the total), banks, telephone and telegraph, gas and light works, water works, and stocks of merchandise. This is a very rough classification, but it clearly forms a group of values dependent upon the population supported by the above named industries. It includes also some primary values, those which result from the "climatic industries" of recreation and recuperation. There is no way of determining the exact value of city and town property which is derived from the presence of health-seekers and vacationists, but an interesting estimate may be obtained by a comparison of ratios of city property to the dominant industry of the different counties.

In the farming counties of Yuma and Graham, the city property is 100 per cent and 70 per cent respectively of the total value ascribed to farming. These two regions have very little of the recuperation and recreation trade. Similarly devoid of health industries, the two mining counties of Greenlee and Gila reveal a city property total which is 10 per cent and 14 per cent of the mining values respectively. In contrast with these should be noted the farming county of Maricopa where the city total is more than 200 per cent of the farm values or twice the Yuma figure. Likewise, the mining county of Pima has city property 102 per cent of mining values. This is seven times the Gila percentage.

Maricopa and Pima are the two greatest "climate counties" in the state and much of this extra value of city property should be ascribed to the presence of those attracted by the health and vacation opportunities. In Maricopa County, however, the importance of the political capital of the state must not be overlooked. It seems, therefore, that a conservative estimate of the importance of climate would ascribe to it half of the extra city value in Maricopa and 60 per cent in Pima. This gives twenty-two million dollars for the former and eighteen for the latter. If we add a rough ten million for the city values similarly caused in other counties (cf., especially Yavapai, Coconino, and Cochise), we get a total of fifty



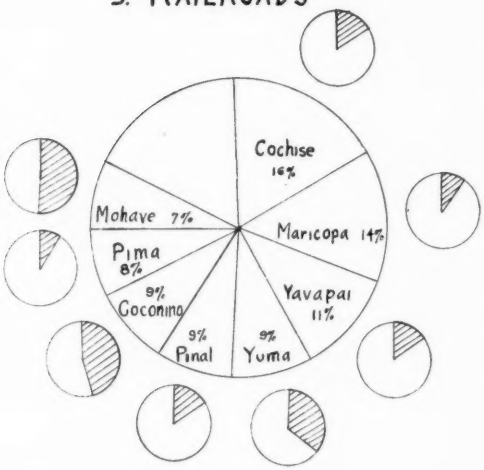
FIGS. 1 TO 7. Classes of property of the state and by leading counties. Satellite circles indicate importance within each county.

million dollars or approximately one-fourth of the value of all the city property in the state. This should also be compared with primary agriculture's sixty-eight million and grazing at twenty-six.

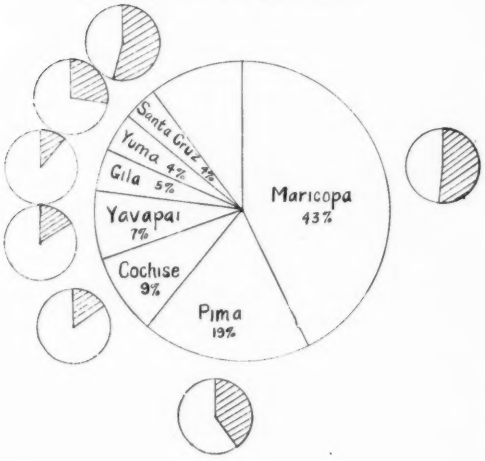
LEADING COUNTIES IN PRIMARY INDUSTRIES

The distribution of each industry among the counties of the state is shown clearly by Figures 2, 3, 4, 5, and 6. The large circles give the important counties and their proportion to the state as a whole. The shaded portions of the satellite circles indicate the im-

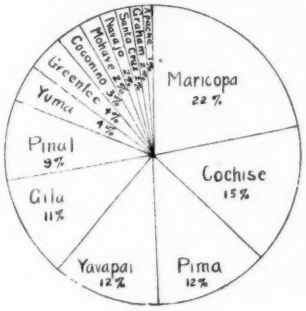
5. RAILROADS



6. CITY PROPERTY



7 TOTAL ASSESSED VALUATION



portance of the industry in the wealth of each county. The map reveals the distribution of wealth for the state as a whole and also the division within each county.

Conspicuous are the six big mining counties which include practically the entire mineral industry of the state. In each of these, except Pima, mines account for more than half of the property in the county and in Greenlee and Gila more than three-quarters of the wealth is dependent upon them.

There is only one great farming county. Maricopa has over 60 per cent of the state's agriculture. Yuma has only 12 per cent but finds farming slightly more important to it as a county than the same industry is to the county of Maricopa. Graham, with only 4 per cent of the total, is in the same situation. Under present conditions the county which seems most likely to have a rapid expansion of its cultivated land is Pinal where the Coolidge Dam water is now reclaiming many acres of desert land. Yuma County also has great possibilities if Arizona can get a fair share of the water from the Colorado River. In a region like that

of Pima County where agriculture is based upon pumped water, farming development is definitely limited.

The charts reveal that the animal industries are neither important for the state, for any particular county, nor within any county. Maricopa has both natural grazing lands and the opportunity for winter forage and fattening on its irrigated acres. The same is true for Pinal and Pima, tho to a lesser degree. The livestock industries of Cochise, Coconino, Apache, and Yavapai Counties most truly deserve the name of grazing for there the combination of elevation, topography, and rainfall is most suited to the natural growth of grasses. Only in Coconino and Apache counties does the industry furnish more than 15 per cent of the total wealth and there only because neither mines nor farms are important.

Lumbering is confined to three counties, Apache, Coconino, and Navajo. The southern end of each includes a part of those lands of high altitude and relatively heavy rainfall (over 20 inches) which produce our great yellow pine forests. The McNary and Flagstaff districts in the first two are the most important, tho the state total is so small as to be insignificant in the general economy.

RAILROAD AND CITY PROPERTY

The basis of Arizona's railroad systems has already been indicated. It is the thru routes determined by location and topography. Wherever the presence of mineral or agricultural wealth has necessitated additional transportation facilities, those counties have high railroad valuation totals. This is true especially of Cochise, Yavapai, and Pinal counties where the routes to Bisbee-Douglas, Jerome, and Superior and Ray-Hayden may definitely be ascribed to the mines.

Maricopa has extra railroad mileage due to its many farming communities. It is also the natural junction point for the branch line of the Santa Fe connecting with the Southern Pacific. Yuma County includes a large part of the transcontinental Southern Pacific and some of a less important branch of the Santa Fe in the north. Pima County has the important northern terminus of the Southern Pacific of Mexico and a small part of the railroad built to tap the mines at Ajo.

Wherever the primary industries are unimportant, the railroads furnish the largest single item in the counties' wealth (see

Fig. 9). This is true of the four northern counties: Mohave (51 per cent), Coconino (46 per cent), Apache (46 per cent), and Navajo (37 per cent). Each of these contains a portion of the main line of the Santa Fe and Coconino also has the important branch to the Grand Canyon. Graham County owes its valuable railroad mileage (37 per cent of the county's total wealth) chiefly to the adjacent mines in Gila County.

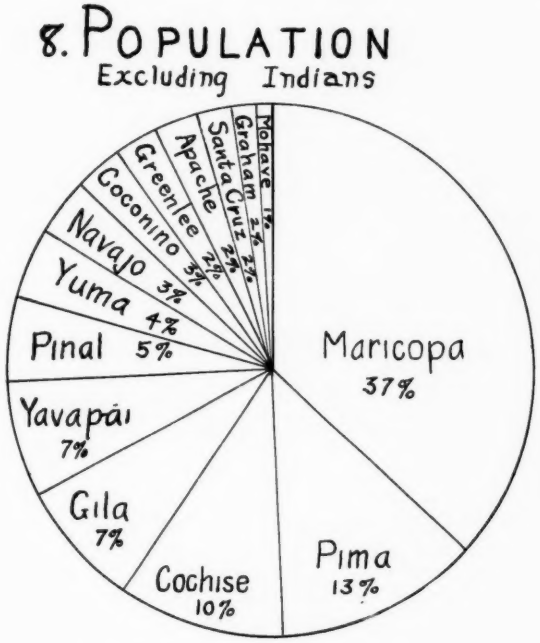


FIG. 8. Distribution of Arizona's population by counties

Maricopa County with its combination of farming, climate, and State capital leads in city property. Second place is held by Pima County largely due to the attraction of Tucson's climate, tho the University of Arizona, railroad shops, and Ajo copper also contribute materially. The cities of Cochise and Yavapai Counties owe their size to climate and grazing in addition to the basic mining industry, as may be seen by a comparison with Gila County. Douglas of Cochise and more especially Nogales in Santa Cruz owe part of their size to their location on the Mexican border. The latter city would not be half its present size were it not for this political and trade factor.

DETERMINANTS OF POPULATION CENTERS

A comparison of city property derived from agriculture and that from mining is an interesting one. Thus Graham County with agriculture the dominant primary industry has seventy dollars of urban property for every one hundred in farms. On the other hand, an exclusively mining county, Greenlee, has less than ten dollars

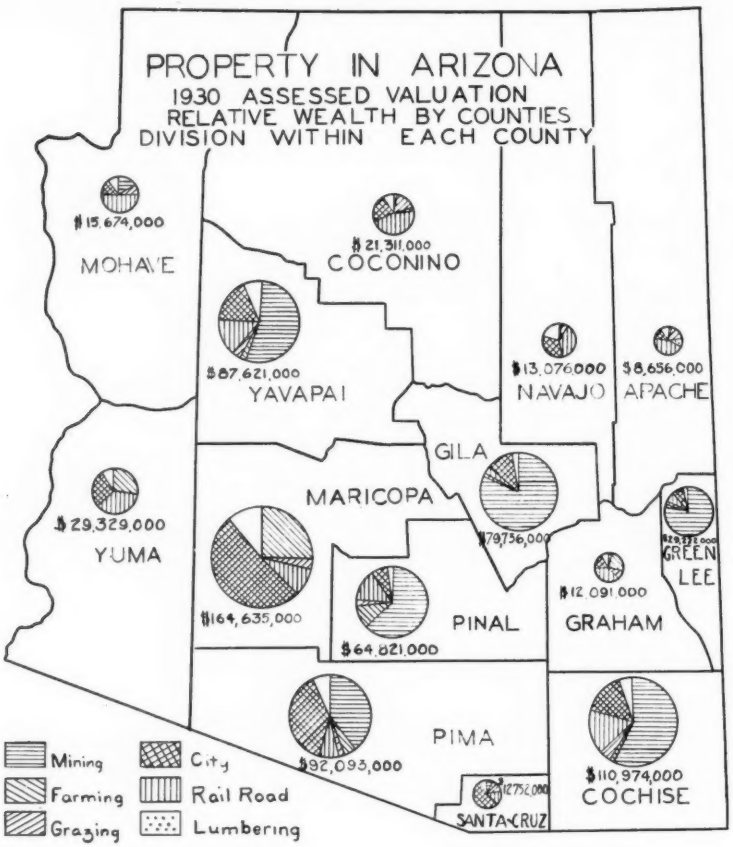


FIG. 9. Distribution of property by counties

of urban property for every one hundred connected with mining. This seven to one superiority of agriculture to mining in supporting cities and towns, is, of course, brought about thru the different effect of each industry upon population. Confirmation of this may be had by comparing the number of people for every ten thousand dollars of wealth in the primary industry. For Graham County it is thirty, but for Greenlee it is only four, again about one-seventh. Agriculture brings more people, but mining yields a higher per capita wealth. Thus Greenlee has $2,830 per capita to Graham's $1,240. (Compare also Figs. 7 and 8.)

For the last five years the value of crops produced in Arizona compares with the mineral output in the ratio of approximately one to three. Assessed value of property as grouped above is one to four. This close correspondence in ratios for the state as a whole

warrants the use of property instead of product values by counties, the latter figures not being available. The particular counties above discussed indicate that agricultural industries support seven times as many persons per dollar of product as does mining. But output values are in the ratio of one to three. Therefore, the people of Arizona dependent upon agriculture are seven-thirds or about twice as many as those dependent upon mining. This is in striking contrast with the very inferior position of agriculture in the economy of the state when the customary measuring sticks are used.

We conclude, therefore, that tax list data furnish a quick method for showing the leading features of the economic life of any region. Combined with a previous study of the general geographic determinants, the reasons for the location of industries become readily apparent. By itself it further reveals significant comparisons of wealth, population, and physical environments which the traditional methods usually overlook.

REGIONAL INTERDEPENDENCE

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A matter of first importance in geographical science is the interdependence of areas. It is possible to describe an area with little regard for the lands surrounding it, but it is much more difficult, if not impossible, to explain how the area came to its present development without considering the relationships with other parts of the world. These relationships appear to be almost wholly dependent on phenomena of a *circulatory* nature—on the movement of winds, waters, animals, plants, etc., as well as of goods, men, and information.

The movements of the more mobile elements of the natural environment introduce well-known interregional connections. Winds cause sand dunes to migrate from barren desert and steppe lands to nearby agricultural areas, and flood waters rush down from denuded mountain slopes to spread their burden of sediment on fertile lowland fields. Furthermore, any attempt on the part of man to modify a stream, the depth of its channel, its flow, or sediment load, in using it for navigation, water supply, irrigation, etc., is likely to increase the importance of the stream as a link between regions. The Boulder Dam project illustrates this tendency.

The regional interdependence based on the migrations of animal and plant forms is likewise significant. Of 183 major insect pests in the United States, at least 81 are thot to have been imported. The gradual decline of kitchen orchards in many parts of this country is in no small measure due to the growing host of insect enemies. The northward shift of cotton growing in the South was definitely related to the Mexican gift—the boll weevil. On the other hand, migratory bird life, constitutes one of our principal wild-life assets. The abundance of bird life during the duck-hunting season in Louisiana swamps depends on the conditions which obtained a few weeks earlier in the summer feeding grounds of Saskatchewan. Canada and the United States have recognized this interdependence in the Migratory Bird Treaty of 1916. The interregional connections growing out of plant migrations are less striking, altho weed seeds travel long distances, and domesticated plants intro-

duced from abroad have been known to revolutionize the agricultural landscape, even causing modifications of the storehouses and dwellings (e.g., corn and cotton in Egypt). Results of this kind, however, are largely brought about thru the direct action of man as an agent in promoting the circulation of goods, of men, and of information.

Perhaps the principal thread connecting regions in a symbiotic group like the snails, fish, frogs, and green plants in a "balanced" aquarium, is trade. The flow of goods along great world trade routes has permitted and stimulated specialization. Specialization in turn, makes a given area abjectly dependent on other parts of the world. Thus the prosperity of the Cotton Belt is intimately related to conditions in the Manchester textile area of England, that of the iron mines of the Upper Lakes to the iron and steel manufacturing cities of the Lower Lakes.

The migrations of men tie areas together. Well-known examples are the movement of Italians to Argentinan wheat fields, the flow of laborers a generation ago from the lumber camps of Michigan to the wheat fields of Kansas and back again, the recruiting of laborers for the Piedmont cotton factories from the mountain farmers of the nearby highlands.

The flow of goods and of men has been facilitated by improved means of communication. The circulation of information thus takes rank as one of the major interregional connections. Mail service, the telephone, telegraph, and radio make possible a quick exchange of goods in response to differences in demand. Furthermore, circulation of such information as business plans and governmental orders becomes a potent factor, aside from the outcome in commodity movements. Corporation plans formulated in New York affect the development of copper fields in Chile, and French colonial policies, the result of deliberations in Paris, have been instrumental in pushing back the nomad from the Mediterranean littoral in Algeria.

Circulatory phenomena thus deserve to be considered in regional study, not only because they constitute a part of the "picture" but also because they are vital to any thoro understanding of that picture. Whether the student be dealing with small units, measured in acres, or large ones covering hundreds of square miles, this principle—regional interdependence as a function of circulatory phenomena—may be consciously applied with profit.

URBAN GEOGRAPHY IN THE GRADES

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Urban geography is a phase of regional geography, therefore the study of individual cities as a response to the natural environment may be pursued in those grades where regional geography is studied. With more than half of the people of the United States living in cities, the city landscape is the most familiar and significant to many children. Frequently its interpretation is one of the most complex problems within the scope of regional geography. To make a complete study of an organism as complicated as Chicago would obviously be impossible in the grades, but the study of simpler units may be attempted with confidence, and many phases of the geography of larger cities may be satisfactorily investigated by children.

The importance of the study of urban geography in the grades is recognized by many of the present writers of textbooks. The investigation of these texts or the use of any one of them with appropriate supplementary materials makes it seem necessary for the teacher to have a definite plan whereby the ability to interpret city landscapes may be gradually developed. Any of the relationships expressed in the following outline may be used in the study of any city or group of cities, and the material collected will be within the limits of the subject of geography. It is not likely that all topics could be dealt with in the study of any city because of the limited material within the reading ability of grade children; neither is it desirable that an attempt be made to study all large cities of a region with equal thoroness; or that in the study of selected cities that every detail should be treated, lest the distinguishing characteristics be lost in the mass of material of little or no importance. The outline presented may be used as a guide in selecting and interpreting material which may be called urban geography.

I. Why is this land used for a city?
   A. What were the conditions which caused it to begin in this place?
   B. What conditions were responsible for its growth?

II. How is the land within the city used?
   A. What influence of the natural environment (surface, soil, minerals, climate, plants, animals) can you see on:

1. Street pattern
2. Location and character of the business district—manufacturing, wholesale, retail
3. Location and character of transportation lines
4. Location and character of residence districts
5. Location and character of parks and public buildings
6. Shape of the city

B. What advantages or handicaps do you see in this site?

C. What relation can you see of one cultural feature to another?

D. What influences of people from other countries do you see reflected in such cultural features as style of architecture, means of transportation and sanitation?

E. To which of the following groups does the city belong?

1. Commercial centers
2. Industrial centers
3. Government centers
4. Pleasure resorts
5. Health resorts
6. Centers of religious activity
7. Cultural centers

A few brief descriptions of the types of exercises which are appropriate to aid in the study of maps, pictures, and text materials may be suggestive.

1. The construction of maps from descriptions of a city which may be used to represent a type. For example, the pupils may draw a map of Kano, from the description in Allen, *Africa, Australia, and Islands of the Pacific,* pp. 142-146. Their maps may be compared with the map in Gregory, *Africa,* p. 134.
2. The construction of a series of maps to show: (1) "Why this particular piece of land was used for a city." For example a map of London would show that London is at the first easy crossing up stream. (2) Relative locations. In this case one map may bring out the relation of London to the coal fields, another to the railroads, etc.
3. Construction of maps from aeroplane pictures by putting in the street pattern first, then using certain colors to designate the industrial sections, commercial areas, etc. This serves as a very good test of the ability to interpret such pictures.
4. Matching of pictures with a large scale map to determine the position of the photographer.
5. Matching pictures of one city with those of another to see the close resemblances of cities which are in similar regions developed by same race of people. For example, pictures taken in Spanish cities and in Mexico may be matched almost perfectly.
6. Quick identification of cultural landscapes by naming the city in which the picture may have been taken, such as "grain elevators" for Montreal, Quebec, or Winnipeg; "street scenes in Canton" as distinguished from those in Peiping.
7. The selection of a series of uncaptioned pictures from a large number to fit the description of a city.
8. Formulation of principles after the study of many cities which may be tested in succeeding exercises.

VISITING EUROPE FOR A YEAR

A Project in Geography

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I met my new class of fifth grade youngsters in September, knowing that the curriculum called for a complete study of Europe in the geography class. However, I wanted the suggestion to come from the class and I knew that the parents of several children in the class had visited Europe at various times and so I took a chance on my plans working.

On the first day I began by asking them if they could go anywhere they wanted to and remain in one place as long as they were interested, without considering the cost, where they would go, and the majority said, "Europe." I then outlined a fairy-like trip to last a year during which time we could travel in any way desired. Some could use trains, others automobiles, while some could go by air or boat where there might be a water connection, and we could still all be together as one party, in fancy. This idea appealed to their imaginations greatly. We were even to go on different ocean liners if we so desired.

The first thing we did was to find the cost of getting to our port of sailing and a short stay at a hotel until the sailing date. We kept a cash account of such items as train expenses, hotel bills, steamship passage, passports, visas, tips, etc., but not going into this too deeply.

We chose our favorite hotel in New York and this was such a real experience that I even found flowers, fruit, and candy awaiting me in my room.

The entire experience was to be recorded in the form of an illustrated diary to be kept up from day to day.

On the voyage we enjoyed the usual deck sports, were not seasick, and from many folders secured from tourist bureaus became very familiar with all parts of such ocean greyhounds as the *Aquitania*, the *Majestic*, and the *Ile de France*.

We learned the distances from different American ports to various European ports, with the number of days required by boats of differing size and speed.

When we were ready to land on the other side we all came to-

gether for an experience meeting. Each one reported on his or her findings and much interesting information resulted.

We then separated or formed groups of three or four and began our travels.

We usually studied our maps for the general lay of the land, the rivers, location of large cities and mountains, which might make motoring questionable. We consulted guide-books of conducted tours to see what places were considered important to visit before we set out. Sometimes we made a sketch map and sometimes used a plain outline map, filling it in as we progressed. Always we secured as many pictures to illustrate our findings as we could. These were to represent the kodak pictures which we took along the way. At least once a week, oftener if things grew so thrilling that we could not wait, we all got together and talked things over. We listed the various occupations in which we found the people engaged.

We studied the architecture of different countries, learning the difference between Gothic and Romanesque, for example. These we illustrated with pictures or drawings when we could. In Greece we learned the difference between the Doric, Ionic, and Corinthian orders, made ivory soap models of the Parthenon and bas-reliefs of the frieze, and learned of the Elgin marbles which we saw in the British Museum.

We learned something of the old Greek sculptors and where to find some of their best known masterpieces. Here we reviewed some of the Greek myths and collected pictures of the gods of the early Greeks. We found many references to mythology in present-day advertising and made a very interesting collection of such references from current magazines.

In each country we found fascinating stories in literature: "William Tell" in Switzerland, "Joan of Arc" in France. "The Prisoner of Chillon" we read sitting on the floor, pretending that we were in the cold, damp dungeon, and it was so real that we actually shivered. For this study we had a full set of post card pictures. We read Norse myths in the Scandinavian countries, "Bobby" Burns' poems in Scotland, Kipling's "Machines" in Birmingham and "Big Steamers" in Liverpool, "The Belfry of Bruges" in Belgium, and many others.

We visited the North Cape and saw the sun at midnight. We played with the bears in the bear pit in Berne. We petted those

almost human friends at the Hospice of St. Bernard. We climbed the Matterhorn with Richard Halliburton and flew over the Dolomites in one of those monarchs of the air, looking down upon an unforgettable panorama of rose-tinted peaks.

We studied the work of the Guilds, the tapestry and lace makers. In Venice we bought bits of rare lace. In Grasse we visited a perfume factory. In Amsterdam we saw the diamond cutters at work.

I remember that when one group was in Nüremburg, one member asked if we would have time to "go" inside the homes of Hans Sachs and Albrecht Dürer, and when I said of course they might if they were interested, they read the descriptions of the interiors of these homes in Baedeker and reported in their diaries the quaint furnishings.

In Dresden we wanted most of all to see the "Sistine Madonna" and one young traveler wrote, "When we reached Dresden we stood for ten minutes before Raphael's painting, 'The Sistine Madonna,' for that is really what we came to Dresden to see." We had learned who some of the old masters of painting were and where their greatest masterpieces could be seen.

And so we went about from country to country, singing "The Volga Boatman's Song" in Russia and "O Sole Mio" in Italy, besides other songs as we came upon them in their native land. We were aided in this by the victrola and piano.

No short story of our year could possibly tell all that we saw and did, but in the end we each had our diary, in some cases three inches thick and with hundreds of pictures, with its story of our daily wanderings, samples of our purchases, sketches and maps—all too valuable ever to be parted with. (Our pictures were Brown and Perry prints, post cards, and pictures from magazines.)

At the close of this school year one of the girls in the class visited Europe with her family. She wrote to me from Athens saying, "As we were sailing into the harbor of Athens, I could tell the people on the boat all about the building of the Parthenon and the architecture of the different buildings in the city."

We used, wherever we were, the stereoscope pictures and stereopticon slides of such cities as London and Paris. We also gave talks on favorite cities, using our own selection of pictures with the balopticon.

Our English and spelling, as well as our handwriting improved, and our books, which differed according to the interests of the writer, would have been a credit to any world traveler.

TEACHING NORTH AMERICA AS A WHOLE

PAULINE RAFTER POWERS
Boston Model School

In a fifth grade on the opening day of school last fall, I found, by means of a false and true test, four pupils who did not know on what continent they lived, one unable to tell in what country he lived, three who did not know the name of their state, and two who were ignorant of their city's name. Fourteen pupils could not state the direction in which Canada lies from the United States; six were in error about Mexico's location, eighteen knew nothing of the existence of Central America, and five had never heard of Alaska.

I asked the children how they could help unenlightened mates to find the name of their city. Various suggestions were made: "Look at the label pasted on the inside of the front covers of our schoolbooks." "Think what is painted on the side of the police ambulances and the fire engines."

Our next step was to turn to the political world map in our geographies and to find our city—Boston—and to note that it was in the state of Massachusetts—and that Massachusetts was in the United States. We saw Canada, Alaska, Greenland, Iceland, Nova Scotia, New Brunswick, Newfoundland, Labrador, Mexico, Central America, the West Indies and commented on their location in relation to our own.

Next we studied the direction in which Europe lies from the United States, also the comparative locations of the other continents in relation to ours.

A wall map of the world seems to me an invaluable asset in fixing in children's minds their geographical relation to the rest of the universe. Of what use is an elaborate study of wheat growing in the United States if the child has hazy ideas on what direction the boat sails from New York to take flour to Liverpool?

After thoroly learning the political divisions of North America, we turned to a relief map and there studied the more prominent physical features.

1. The Atlantic Coastal Plain
2. The Appalachian Highland
3. The Gulf Coastal Plain

4. The Great Central Plain
5. Rocky Mountains
6. Mexican Plateau
7. Cordilleran Highland
8. Pacific Coast Ranges

More detailed physical land features might be gone into in a higher grade, but these seemed sufficient for elementary purposes and after some discussion I hung up a blackboard relief map and the children very readily chalked in the physical features just mentioned.

Next we located the Great Lakes, the Mississippi, Columbia, Mackenzie, St. Lawrence, and Yukon rivers, Hudson Bay, the Gulf of Mexico, the Atlantic and Pacific oceans, the Arctic ocean, the Carribean Sea.

We asked the newly organized Current Events Club to bring in newspaper and magazine clippings on anything pertaining to our study of North American features and the responses were interesting and valuable in fixing both political and physical geographical facts.

The children were now able to ask many intelligent questions and in most cases to answer these questions of mine:

1. What great mountain system is in the western part of our continent?
2. Does this mountain system end on our continent?
3. What great lowland lies in the central part of North America?
4. If there is a large Atlantic coastal plain, why isn't there a Pacific coastal plain?
5. What grows on our Atlantic coastal plain?
6. On the great central plain?
7. Thru what countries does the great central plain pass?
8. What grows on the Gulf coastal plain?
9. Does the equator pass thru North America?
10. Considering their distance from the equator, what would you expect of the climate of the West Indies? Central America? Mexico?
11. If it is true that bananas must have a tropical or almost tropical climate, would you expect to find them growing anywhere in the United States?
12. From what countries do we buy our bananas?
13. Why are Alaska, Porto Rico, the Panama Canal Zone and the United States all of one color on the political map?
14. Why isn't Greenland colored the same as Canada?
15. Why is a map that says in parentheses under Iceland "to Denmark" an old-fashioned one?
16. Why did Lindbergh fly to Central America?
17. How many countries are there in Central America?
18. Who owns Canada?
19. Are we friendly with Canada?
20. What European nation owns part of Central America?

21. Which is farther north, Montreal or London? How do you know? Which is colder?

22. Name three big cities in Canada. In the United States. In Mexico. How do you know from consulting a map that they are big? Why are there not as many big cities in the western part of the United States as there are in the east?

23. Why do so few people live in the northern part of Canada?

24. Looking at the rainfall gauge on our maps, about how much of our country has sufficient rainfall? How much is arid? Semi-arid?

25. What does the expression "cold as Greenland" mean?

26. Which do you think a more appropriate name considering its climate, "Iceland" or "Greenland"?

27. The map shows a section of southern California as arid and yet a great deal of our fruit comes from this very section. Can you explain this?

28. What effect would you expect the Western Cordillera to have on the rainfall of the western half of the United States?

29. What is the section of the country we live in called? Why?

30. Does New England have a wet and a dry season? Why not?

31. What animals would you expect to find in Canada that you would not find in Mexico? Why?

32. Name a tree that could *not* grow in Canada. Name one that you do not associate with Mexico.

33. If the temperature of New York state were the same as that of Northern Canada, would New York be the second largest city in the world?

After about two weeks of study along these lines, invoking the aid of newspapers, magazines, advertisements, travel booklets, on a blank map of North America children eagerly and readily pasted cutout pictures of wheat, corn, cod, salmon, cattle, coal, iron, lumber, petroleum, apples, oranges, bananas, etc., in their correct locations. The same false and true test given previously, was now retaken with results that were decidedly gratifying; and a new test made out by a committee of pupils working with me and for the purpose of scoring the children's knowledge of the work covered by our study (outlined above) of North America also showed a very high class average.

INTEREST-STIMULATING DEVICE

The Cross Word Puzzle

The teacher of geography frequently finds that a marked departure from the usual class procedure and class equipment lends interest and vigor to the class activity.

An occasional use of the device herewith presented attains these ends, and serves the purpose either of introducing new terms and topics for discussion, or of reviewing those already presented.

A teacher who has the time and a flair for such things, will find an almost unlimited opportunity in their preparation and use. For instance, puzzles of this kind may be prepared with names of cities, of countries, or of other geographic terms, as the basic idea.

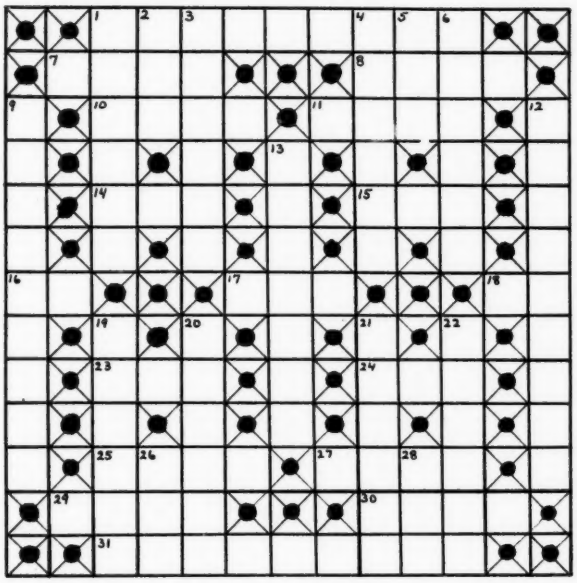
Where the mimeograph or hektograph is available, the production of these devices for class use is simplified, and may be made as extensive as desired.

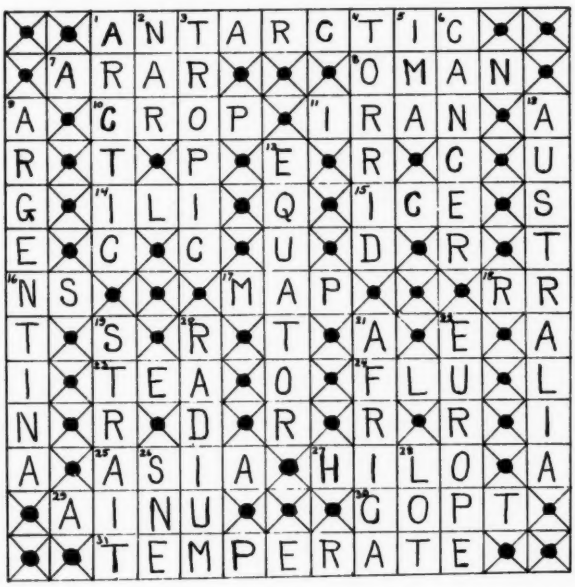
ACROSS

1. South polar sea
7. Sandarac tree of Morocco, also an old name for the Saone river
8. Gulf of the Arabian Sea
10. Product of the land
11. Persia
14. City of Sinkiang Province in western China
15. Common in winter
16. Abbreviation for an East Canadian province
17. You need one to find 8, 11 and 16
18. Abbreviation for two parallel cross-country lines of steel
23. Foliage product of Ceylon and China
24. Disease common in cold, damp weather
25. Land between Europe and the Pacific Ocean
27. A city in Hawaii
29. A native of northern Japan
30. An Egyptian people
31. Zones between Tropics and Polar Circles

DOWN

1. North polar sea
2. Syllable common to Benares, Pinar del Rio and San Bernardino.
3. Latitude 23½° North or South
4. Zone of strongest sunshine
5. A Turkish girl's name
6. Tropic at 23½° North
9. Its capital is Buenos Aires
12. Famous for wool, wheat and kangaroos
13. Latitude zero
19. There's one between Florida and Cuba
20. A very valuable mineral
21. Home of the zebra and gorilla
22. Continent of many peninsulas
26. Three cardinal points of the compass make an abbreviation for Southern New England
28. Unit of land measure in cities and villages





H. D. GROSE, *Township High School, Joliet, Illinois*

NOTICE

Please send your devices to the Editor. We will be pleased to publish more plans that have been found to be helpful. Do not hesitate to send in your devices on the assumption that other people have already sent in theirs, and that yours will be of no value. These devices are proving of great interest to many teachers, and we would like to have a large number on file. Please write your directions so that they are sufficiently definite for another teacher to follow accurately.

EDITORIAL NOTES AND NEWS

According to the annual report just released by the Department of the Interior thru the Geological Survey, the total capacity of water wheels at water power plants in the United States on January 1, 1932, was a little more than 15 million horsepower. This is almost double what it was in 1921. This increase is especially noteworthy because during this period the development and improvement of steam power-plant equipment and the increase in the efficiency of operation of steam plants have been almost phenomenal. Copies of the complete report may be had from the Director, U. S. Geological Survey, Washington, D.C.

To check gullying started in grain fields, meadows, or pastures, the U. S. Department of Agriculture is advocating the use of a "living dam" made of old burlap sacks filled with squares of bluegrass sod. The grass soon grows thru the meshes of the rotting bags, and spreads on to the soil which is caught above the dam during a rain. On steep banks the sod may need reinforcement with wire, brush, or rocks, supplemented with locust or willow planting. The need of checking this erosion may be gleaned from the fact that an inch of the finest top soil in northern Missouri under continuous corn cropping is washed away in seven years on slopes of four feet in a hundred. Since it takes Nature 400 years to make this inch of soil, it is readily seen that no farms can stand such losses. For further information on checking slope wash, send to the department of Agriculture, Office of Information, for leaflet 82-L.

The completion of the George Washington Memorial Bridge across the Hudson between Manhattan Island and New Jersey and the Kill Van Kull Bridge between New Jersey and Staten Island are two of the notable engineering achievements of 1931. Another outstanding one is the reclamation of the first "polder" of the Zuyder Zee project which adds about 30,000 acres to Holland's farming area. Railway and highway construction during the year was widely distributed. By the completion of a section of railway in the Belgian Congo, it is now possible to travel by rail across Africa from Lobito on the Atlantic to Beira on the Indian Ocean. This line taps great copper resources.

How the handicap of distance is being lessened is illustrated by these recent achievements in transportation and communication. Thus, a Hamburg-South America liner recently made a record trip between Southampton and Buenos Aires in 14 days, 19 hours, after calling at Santos and Montevideo. Also, the Cape to Cairo, passenger air route which is expected to begin operations soon, is to be flown in a little more than a week. No night flying will be done. Overnight stops will be made at Rand, Salesbiry, Mbeya, Nairobi, Juba, Khartoum, Wadi Halfa, and Cairo. Passengers will entrain for Alexandria and then fly to Brindisi. From Brindisi there is plane service via Paris to London except in winter when train service is substituted in the part between Brindisi and Paris. As for progress in developing communication, there are already about forty countries with which an American can have telephonic conversation.

The work of rescuing waterfowl crippled during the hunting season is one phase of the nation-wide waterfowl studies made by the Bureau of Biological Survey, U. S. De-

partment of Agriculture. Thus far the principal work has been in a game reserve in California where the wounded birds were retrieved by volunteer workers aided by a trained Springer spaniel. Those mortally wounded were killed; the others, protected and liberated when completely recovered. The Survey hopes to further the work and also hopes to make hunters more conservative in their long range shooting.

DR. GEORGE D. HUBBARD, Oberlin College, spent all of last year in visiting European countries and is now engaged in further study of several European problems. The results of his study of Albania appeared in the *Bulletin of the Philadelphia Geographical Society.*

DR. S. VAN VALKENBERG, College of the City of Detroit, has accepted appointment as Professor of Geography at Clark University. During the coming summer he will conduct a field party to Europe and begin his new duties next autumn.

DR. DOUGLAS JOHNSON, Columbia University, who has been engaged for a number of years in research work on the Appalachian section of North America, has presented a new theory of the geomorphic evolution of the eastern United States in his recent book "Stream Sculpture on the Atlantic Slope." In connection with his studies of the correlation of ancient marine levels and origin of rock pediments at the base of mountain ranges in arid regions, and other investigations, he visited, in 1929-30, South Africa, Australia, New Zealand, Java, China, Japan, Hawaiian Islands, and California. Last year he traversed the Atlantic and Gulf coasts from Rhode Island to Texas, and visited New Mexico, Arizona, and Nevada. Professor Johnson was elected recently to honorary life membership in the National Geographic Society in recognition of his contributions "for the increase and diffusion of geographic knowledge." Last September he presided over the physical geography section of the International Geographical Congress at Paris.

DR. BERT HUDGINS, College of the City of Detroit, has completed his study of the "Historical Geography of the Detroit Water Supply," to be presented before the Michigan Academy of Science.

DR. N. H. DARTON of the U. S. Geological Survey has recently completed a topographic map of Texas similar to his maps of Arizona and New Mexico. It is on the 1:500,000 scale and with 100 and 200 foot contours. It presents the results of extensive original surveys made in mapping the geology of the western part of the state and a compilation of all available data including profiles, well elevations, and surveys by oil companies and the army. Doctor Darton has nearly completed a guide book of geology, etc., along the Southern Pacific Railroad from New Orleans to Los Angeles similar to the other guide books of western railroads published as bulletins of the U. S. Geological Survey a few years ago. It contains 29 maps covering the entire line and showing topography and geology in a strip about 25 miles wide. These railroad guidebooks have been an interesting test of public interest in scientific matters for they have been received with great appreciation.

DR. R. M. HARPER, University of Alabama, is engaged in the preparation of a report for the State Geological Survey on the resources of central Alabama. It will be similar to one on the southern third of the state and will cover geology, topography, soil, climate, vegetation, population, agriculture, industries, etc.

DR. RAOUL BLANCHARD, Harvard University, has been devoting a part of each summer and autumn during the last three years to field studies in French Canada. These are still in progress and will continue for at least two years more. Reports of each season's work have been published in the *Revue de Geographie Alpine*. Each paper discusses one major section of French Canada—Gaspe, the South Shore of the St. Lawrence, the North Shore, etc. Next summer Dr. Blanchard will offer courses in the University of California prior to resuming his field work and his regular teaching at Harvard.

DR. RALPH H. BROWN, University of Minnesota, will spend the summer field season in investigating the irrigation-cultural forms in the Black Hills oases, the first of several such studies to be undertaken in the Great Plains region.

DR. RODERICK PEATTIE of the Department of Geography, Ohio State University, is spending the year in Europe where he is traveling and studying in the Alps and other related mountain areas.

MR. A. G. OGILVIE, formerly Reader in Geography at the University of Edinburgh, has been elected Professor of Geography. This is said to be the first Professorship of Geography to be established in a Scottish university. It will be remembered that Professor G. G. Chisholm was for a long period Reader in Geography in Edinburgh. Professor Ogilvie is his successor. We are informed also that a Department of Geography has been established recently at the University College, Swansea, Wales.

DR. GUY-HAROLD SMITH of the Department of Geography, Ohio State University, has been appointed by Governor White to membership on the Ohio Bicentennial Commission, which will assist local communities celebrate the two hundredth anniversary of the birth of George Washington.

DR. SAMUEL N. DICKEN, University of Minnesota, will spend the summer field season in north-central Florida where he will make a regional study with special reference to solution landscape forms.

PROFESSOR J. R. SCHWENDEMAN, State Teachers College, Moorehead, Minnesota, will conduct an European geography tour of college students during the summer.

PROFESSOR MABEL SCHWARTZ, State Teachers College, Macomb, Illinois, has returned to Columbia University to complete her doctorate.

GEOGRAPHICAL PUBLICATIONS

Marcel Aurousseau. **Highway into Spain.** 686 pp. New York, Alfred H. King, 1931.

There can be only one excuse for comment in a geographic publication upon this vacationing idyll. One cites this gossipy, sentimental and extremely tenuous sample of the often vicious genus, "Travel Book," as a particularly annoying example of its kind —a kind which should be anathema to every serious student of geography. Written by one who from time to time suggests himself as a geographer, the tale of an uninspired tramp from Paris—not "into Spain" at all, but to the Spanish border—takes the form of an all-too-personal letter of two hundred and ninety-four pages, from one of the two walkers to the other; a letter which, paragraph by paragraph, "reminds" "Max" of their common ten-penny adventures and, presumably common personal reactions. As usual in such works, one learns *ad nauseum* of the petty annoyances of the road—sore feet; numberless meals and their prices in complaining detail; bad beds, and rustic manners; of the scarcity of good English tea rooms in rural France (Mr. Aurousseau never forgets for an instant that he is a Briton), and like inconsequential chitchat.

The author traces a thin line southward, thru the Central Massif, across the Garonne Valley at Toulouse, and into the Pyrenees, omitting no slightest detail of innocuous event—one rounds a curve, one sees a dog, a cat, a tree; one wonders this or that (fruitlessly); one quarrels with Max in a long tedious stretch of woods, and makes up with him (very prettily, with a thrilling touch of the hands) on a long tedious stretch of barren upland. A line then of personalities, dragged across a country that *should have been made to live;* that could have been pictured as one definite district after another, varying not as to trivial incidents of the road, but as to hill folk and valley folk; village, town and city folk; as to waste land and used land; half-timbered houses or boulder houses; slate roofs, stone roofs, tiled roofs; rabbit diet, kid diet, veal or chestnut diet; goat cheese, ewe cheese, cow cheese districts; chateau country, villa or manoir country; ox regions, mule regions, American-tractor regions. Thru all these transitions, each crying aloud, not only to the geographer, but to every eager, open-eyed traveler, the author walks complainingly and plays as his publisher puts it, with "the art of digression" which in this case proves to be the curse of small talk.

Mr. Aurousseau should not have written the book, for he writes not sympathetically, comprehendingly, but with a carping, unseeing bitterness and prejudice. He carries into every simple, charming French hamlet, the provincial mental attitude that makes his kind, English or American, a breeder of ill-will against the Anglo-Saxon on the Continent, and a spreader of equally provincial misunderstanding in his own country. Worst of all, the book is filled with gratuitous examples of frightfully bad taste as to personal experience, and shockingly frank sentimentality as to himself and his luckless companion.

One finds himself wishing that the author would occasionally "digress" from the insignificant to the vital; from the personal phobias to universal truths; from misstatement or misjudgment to something like scientific accuracy. Nowhere is the need of these suggested qualities so evident as in the casual discussion of Toulouse, the one large city encountered, where the author drifts languidly—and insatiably—from café to café, stumbles accidentally upon its deserted market-place, fails to stumble upon a single one of its many distinctive—indeed, unique—features, and plods across the bridge and away damning Toulouse as uninteresting. Mr. Aurousseau, by his own confession, is justified in damning—or in praising—three or four of the city's loitering places. He is not justified in discussing Toulouse as a city, at all.

One lays the book down with the sad realization that the journey, preciously pur-

suing its innocuous way on to Madrid, must certainly bring about another equally mawkish and lengthy "letter" to the cringing Max and those readers who are unwary.

HAROLD S. KEMP

Harvard University

Ellen Churchill Semple. The Geography of the Mediterranean Region.—Its Relation to Ancient History. 737 pp., ills., index, bibliography. Henry Holt & Co., New York, 1931.

Geography in the United States confined itself rather narrowly to the present day and lays stress on the economic aspects of the subject. This is natural and probably inevitable, but surely the fullest cultural value of the subject is to be gained only by combining a knowledge of current economic, social, and political human occupance of areas with life in those same areas in the past. Only so can we fully appreciate the manifold interrelations of place and people which make up the particolored fabric of our subject.

Miss Semple's vividly written treatise on the geography of the ancient Mediterranean World reveals in amazing detail the perennial but ever-changing play of human life in one of the most distinctive and self-contained regions on earth, which happens to possess also the longest recorded history. Not only does she rejuvenate the economic, social, and political life of the classical era, but with broad reach she ties those far-off days to the present by skillful interjection of comments on medieval and modern times. Gods, heroes, emperors, traders, warriors, peasants—all mingle freely and at ease in the common environment of summer drouth, scarcity of water, tiny arable lowlands, mountain barriers and passes thru them, and above all on the common highway of the island-studded sea.

It is Miss Semple's intimate knowledge of classical authors, enthusiastically studied for a quarter century, which gives her the information needed to bring to life a period whose very languages are generally considered "dead." And it is her first-hand familiarity with the Mediterranean region which enables her to recreate living ideas from the dormant words penned so many centuries ago.

The twenty-four chapters of the book are grouped into four parts: (1) general geographic conditions, (2) barrier boundaries of the Mediterranean region, (3) vegetation and agriculture, (4) maritime activities. These are self-explanatory, except perhaps the first, which, in treating the whole natural environment, emphasizes the water supplies and waterways, the earthquakes and volcanoes. The section on the barrier boundaries is perhaps the most engrossing since here along the margin of the Mediterranean world its critical history has taken place. The nine chapters which deal with forests, pastures, and fields reach out to embrace trade in animal and vegetable products. In the foreground of the attention, thruout this section, is water, the most critical element in Mediterranean life. A discussion of maritime activities in a region which consists of a sea and its coastal fringes is, of course, inevitable and forms in a sense the synthesis of the whole volume.

Geography so resides in every paragraph in the book that the reader absorbs it unconsciously. But when he stops to ponder why, he realizes that the natural environment is always clearly pictured, that economic, social, and political life are all discussed as indivisible aspects of human life, and that the dynamic sense of people actually and progressively occupying places is never lost. This is indeed the quintessence of geography. The wary reader will peruse ruminatively lest he lose himself in the maze of facts, and he will keep an atlas under his hand, since the place-names mentioned are many and the maps in the book locate only a few of them.

DERWENT WHITTLESEY

Harvard University